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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/513,117

02/25/2000

Keisuke Yamato-Shi

35.C14302

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06/15/2004

FITZPATRICK CELLA HARPER & SCINTO  
30 ROCKEFELLER PLAZA  
NEW YORK, NY 10112

EXAMINER

HODGES, MATTHEW P

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/513,117

Applicant(s)

YAMATO-SHI ET AL.

Examiner

Matt P Hodges

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-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) 15-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 6, 9 and 12-14 is/are allowed.
- 6) ☒ Claim(s) 5, 7, 8, 10 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

The Amendment, filed on 04/02/2004, has been entered and acknowledged by the Examiner.

Cancellation of claims 15-17 has been entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 5 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Geis et al. (US 5,728,435).

Regarding claim 5, Geis discloses (see figure 3) a light-emitting device including a carbon film (surface of 40) and an electrode (42) electrically connected to the carbon film. The outermost layer of the cathode tip 40 is composed of diamond but is doped with sulfur, in a percentage less than 5%, to provide conductivity. (Column 4 lines 27-39).

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Regarding claim 7, as evident in figure 3 Geis discloses pairs of electrodes each covered with a film as described above and where a gap exists between the films and electrodes.

Claims 8, 10, and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsukamoto et al. (US 5,986,389).

Regarding claim 8, Tsukamoto discloses (see figure 1H) a light-emitting device including a substrate (1), electrodes (2 and 3), electroconductive films (4 and 5), and carbon films (8) located in the gap created by the electroconductive films. (Column 6 lines 13-19) and (Column 9 lines 10-20). The carbon films contain primarily carbon and no sulfur.

Regarding claim 10, Tsukamoto further discloses (see figure 8) the use of wires to connecting the light-emitting devices described above in the rejection of claim 8. (Column 15 lines 30-38).

Regarding claim 11, Tsukamoto further disclose (see figure 9) the use of the wiring and light-emitting devices described in the rejections of claims 8 and 10 above to form an image forming device. (Column 16 lines 26-35).

#### ***Allowable Subject Matter***

Claims 1-4, 6, 9, and 12-14 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claims 1, 2, 6 and 9, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claims 1, 2, 6 and 9, and

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specifically comprising the limitation of an electron-emitting device including a carbon film containing sulfur in the film in a range of not less than 1 mol% and not more than 5 mol% as a ratio to carbon.

Regarding claims 3 and 4, claims 3 and 4 are allowable for the reasons given in claims 1 and 2 because of their dependency status from claims 1 and 2.

Regarding claim 12, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 12, and specifically comprising the limitation of an electron-emitting device including a carbon film containing sulfur in the film in a range of not less than 1 mol% as a ratio to carbon.

Regarding claims 13 and 14, claims 13 and 14 are allowable for the reasons given in claims 1 and 2 because of their dependency status from claims 1 and 2.

### ***Response to Arguments***

Applicant's arguments filed 4/2/2004 have been fully considered but they are not persuasive.

Regarding applicants claim that Geis does not disclose the inclusion of sulfur in the carbon film examiner respectfully disagrees. Geis discloses the use of sulfur to dope diamond films used at the outer most portion of the emitter tip to increase conductivity. The percentage of the sulfur to the carbon is substantially minimal however sulfur does exist and as such the limitation of sulfur being included in a ration of 5% or less with respect to carbon is met.

Regarding applicants claim that Tsukamoto does not disclose the inclusion of sulfur in the carbon film examiner agrees. However the claim language includes the

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statement “less than 5%” which also includes 0% and thus does not exclude the instance where no sulfur is contained in the carbon film.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

### ***Contact Information***

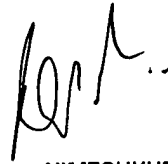
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (571) 272-2454. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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NIMESHKUMAR D. PATEL  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800